Docket No. 87304.1980
Customer No. 30734

PATENT

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES
APPEAL BRIEF FOR THE APPELLANTS
Ex parte Thomas M. GOLNER *et al.*

In re Application of:	:	
Thomas M. GOLNER *et al.*	:	Confirmation No. 7624
Application No. 10/697,950	:	Group Art Unit: 1764
Filed: October 31, 2003	:	Examiner: Nina Nmn Bhat

For: GAS REMOVER APPARATUS AND METHOD

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith is a copy of a Corrected Brief on Appeal, filed in response to the Notification of Non-Compliant Appeal Brief dated July 16, 2007. Applicant respectfully submits that the Corrected Brief on Appeal is being timely filed. However, please charge all required fees, any fee deficiencies, or credit any overpayments to Deposit Account No. 50-2036.

Respectfully submitted,
BAKER & HOSTETLER LLP

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BRIEF ON APPEAL

INTRODUCTION

This is an appeal from the final Office Action dated January 17, 2007 ("Office Action"). A Notice of Appeal was filed on April 17, 2007.

I. REAL PARTY IN INTEREST

The Real Party in Interest in the present application is Waukesha Electric Systems Incorporated by way of an assignment.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences known to the appellant, representative or assignee, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF THE CLAIMS

Claims 1-16, 18 and 20-26 are pending in the application. Claim 1 is an independent claim upon which claims 2-16 and 18 depend. Claim 20 is an independent claim upon which claims 21-23 depend. Claim 24 is an independent claim upon which claims 25 and 26 depend.

Claims 1-16, 18 and 20-26 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Japanese Patent No. 8-2292 to Yoshiyuki et al. ("Yoshiyuki") in combination with U.S. Patent No. 6,518,694 to Golner, et al. ("Golner"), and further in view of U.S. Patent No. 5,946,171 to Magnier ("Magnier"). The claims on appeal, claims 1-16, 18 and 20-26, are set forth in the attached Claim Appendix.

IV. STATUS OF THE AMENDMENTS

An amendment was filed on October 19, 2006. In response to this amendment, a final Office Action dated January 17, 2007, was issued, finally rejecting claims 1-16, 18 and 20-26 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Yoshiyuki in view of Golner, and further in view of Magnier. A Notice of Appeal was filed April 17, 2007.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

A. Brief Summary of the Invention

Regarding mapping of the independent claims-on-appeal to the specification, the following quotations of claim language include reference numerals inserted to identify terms uniquely. Following the claim quotes is a brief summary of the invention that maps the respective terms to the figures and to the paragraphs in the specification wherein the terms are identified. The summary may be read with respect to each of the claims.

Claim 1 recites "a source [18] of substantially nonreactive gas at a pressure greater than ambient atmospheric pressure, a feed line [32] configured to introduce the nonreactive gas into an ullage [34] in the load tap changer [10], a sight glass [14] on the load tap changer [10] to permit examination of the inside of the load tap changer [10], wherein the load tap changer [10] contains mineral oil [36], and an orifice [38] configured to establish a substantially continuous outflow rate of nonreactive gas to expel entrained vapor phase contaminants from the ullage [34] in the load tap changer [10] to the atmosphere."

Claim 20 recites "means for extracting [18] nitrogen gas from the atmosphere, means for urging said extracted nitrogen gas into an ullage [34] in the load tap changer [10], means for monitoring [14] the condition inside the load tap changer [10], wherein the load tap changer [10] contains mineral oil [36], and means for expelling [38] vapor phase contaminants from the ullage [34] in the load tap changer [10] by establishing a substantially continuous outflow of nitrogen."

Claim 24 recites "extracting [18] nitrogen gas from the atmosphere, urging the extracted nitrogen gas into an ullage [34] in the load tap changer [10], monitoring [14] the condition inside the load tap changer [10], wherein the load tap changer [10] contains mineral oil [36], and expelling vapor phase contaminants from the ullage [34] in the load tap changer [10] by establishing a substantially continuous outflow of nitrogen [38]."

The following summary of the invention is presented with reference to drawing figures 1-4. Like reference numerals refer to like parts throughout.

According to the specification, the invention provides apparatus and method for reducing contamination in mineral oil in a load tap changer (LTC), which is a type of switch used to dynamically adjust the circuit characteristics of power substation transformers by connecting and disconnecting parts of transformer windings in response to changes in power demand (refer to paragraphs [0002]-[0007] for background; paragraph [0020] for an overview of the invention). In order to reduce transients, switching events in LTCs (FIG. 1, ref. num. 10) are of make-before-break sequence. In order to minimize arcing and promote cooling, and for other considerations, the switches (not visible within liquid 36) in the types of LTC 10 for which the invention is intended are submerged in refined petroleum (mineral oil) 36 having specific properties chosen to be suited to the environment. Despite such optimization, it is well known in the art that LTCs 10, by virtue of repeated cycling, generate arcing and heat products within the oil 36, such as a shorter chain and volatile hydrocarbons likely to be gaseous at the temperatures and pressures occurring within LTCs 10 (see para. [0020]). Some such gases, particularly in the presence of oxygen and/or water vapor in an open volume, termed ullage 34, above the oil 36, acquire radicals that form acids, increasing their corrosive activity. Other products forming within the LTCs 10 include heavier hydrocarbons that may be liquid or solid; such products may sink to the bottom of an oil bath within the LTC 10 or may form deposits that sliding motion between switch contacts attempts to clear away (see paras. [0005]-[0007]).

In typical applications, such as FIG. 3, a transformer 40 served by an LTC 10 is larger than the LTC. The environment within the transformer 40 is ordinarily more benign, however; the slowly changing temperature and strong magnetic and voltage fields affect the transformer's oil bath appreciably less than do the mechanical sliding and contact interruption within the LTC 10. Thus, volatile or corrosive contaminants are likely formed at a slower rate within the large volume of the transformer than in the small volume of the LTC 10 (paras. [0025] and [0029]).

Pumps and filters within typical LTCs 10 remove a significant share of solids formed during operation. Heavy sludge tends to form relatively inert sediments, and can be removed

somewhat by filtering. The effect of both of these is to clog filters, which must be changed periodically. Light but damaged oil fractions that remain in solution tend to increase contamination over time, and require periodic replacement of the oil. Gaseous breakdown products typically remain in solution only briefly, eventually rising to the top of the oil volume 36 and escaping into the ullage 34. Pressure within the ullage 34 can change over a wide range, from below to well above atmospheric pressure, allowing some contaminants to migrate in and out of solution, and potentially drawing enough vacuum to pull atmospheric air with its oxygen, water, and other contaminants, into the ullage 34, where they accelerate degradation of the oil 36 and the contacts (paragraphs [0005], [0026], and [0030]-[0035]).

Applicant's invention establishes a positive pressure environment wherein introduction of outside air into the ullage 34 is substantially reduced (para. [0031]). The invention further regulates the positive pressure by providing substantially unlimited dry nitrogen at a regulated 46 input pressure and further providing an orifice 38 through which nitrogen with entrained volatile contaminants bleeds substantially continuously at a rate sufficient to extend the life of the oil and the contacts within the LTC 10. Further enhancements include provisions 50 for blocking a sudden influx of water with an excessive head pressure, as could occur during storm flooding of a power substation, for example, and for rapidly reestablishing a preferred pressure 52 over the oil 36 after servicing, for example (para. [0030]). The preferred gas source described in the application is a nitrogen generator 18 using an air compressor 20 and semipermeable membranes (nitrogen extractor 26) to block molecules other than nitrogen, and to store 28 and supply the nitrogen as needed. In alternative embodiments, the gas could be one available at a site, such as helium at an oil refinery, or could be tanks of nitrogen delivered by a service bureau, for example (paras. [0037] and [0038]).

B. Claim References

Independent Claim 1

1. A gas remover to control an environment in a load tap changer 10, the gas remover comprising:

a source 18 of substantially nonreactive gas at a pressure greater than ambient atmospheric pressure;

a feed line 32 configured to introduce the nonreactive gas into an ullage 34 in the load tap changer 10;

a sight glass 14 on the load tap changer 10 to permit examination of the inside of the load tap changer 10, wherein the load tap changer 10 contains mineral oil 36; and

an orifice 38 configured to establish a substantially continuous outflow rate of nonreactive gas to expel entrained vapor phase contaminants from the ullage 34 in the load tap changer 10 to the atmosphere.

Independent Claim 20

20. A gas remover to control an environment in a load tap changer 10, comprising:

means for extracting 18 nitrogen gas from the atmosphere;

means for urging said extracted nitrogen gas into an ullage 34 in the load tap changer 10;

means for monitoring 14 the condition inside the load tap changer 10, wherein the load tap changer 10 contains mineral oil 36; and

means for expelling 38 vapor phase contaminants from the ullage 34 in the load tap changer 10 by establishing a substantially continuous outflow of nitrogen.

Independent Claim 24

24. A process for controlling an environment in a load tap changer 10, comprising the steps of:

extracting 18 nitrogen gas from the atmosphere;

urging the extracted nitrogen gas into an ullage 34 in the load tap changer 10;

monitoring 14 the condition inside the load tap changer 10, wherein the load tap changer 10 contains mineral oil 36; and

expelling vapor phase contaminants from the ullage 34 in the load tap changer 10 by establishing a substantially continuous outflow of nitrogen.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-16, 18 and 20-26 are unpatentable over Japanese Patent No. 8-2292 to Yoshiyuki et al. ("Yoshiyuki") in combination with U.S. Patent No. 6,518,694 to Golner, et al. ("Golner"), and further in view of U.S. Patent No. 5,946,171 to Magnier ("Magnier").

VII. APPELLANT'S ARGUMENTS

A. Claims 1-16, 18 and 20-26 are not obvious under 35 U.S.C. §103(a) over Yoshiyuki in view of Golner, and further in view of Magnier, and are Directed to Patentable Subject Matter.

1. Relevant Description of the Applied Art

Yoshiyuki discloses a transformer with an associated load tap changer (LTC) 20, wherein the LTC 20 and associated apparatus 2 and 3 is partitioned off or separately housed from the transformer, and wherein the respective oil baths 1 and 7 are isolated (para. 13). The problem addressed in Yoshiyuki is detection of breakdown products within the LTC oil bath 7 (para. 19), assuming that both heavy (tar and coke) and light (gas) fractions tend to remain in solution (para. 8). Yoshiyuki describes a valve-controlled draw pipe 10 for extracting liquid from the LTC oil bath 7 so that the liquid can be chemically analyzed (para. 11), such as in a vacuum-impelled gas separation column, identified by reference numerals 11-15 and 17-19, with particular emphasis on detection of dissolved methane 16 (para. 16).

Golner discloses a nitrogen generator 30 that provides a slight overpressure in a nitrogen-charged, oil-filled power transformer 14 (column 3, lines 8-15), along with a set of valves 70, 72, and 74 to prevent backflow and loss of pressure (col. 3, l. 66-col. 4, l. 11). The valves 70, 72, and 74 are configured to regulate between minimum and maximum pressures despite temperature changes (col. 4, ll. 24-38). The system can be configured to provide gas to charge a non-oil-filled (dry) LTC 24 and various other transformer accessories 20, 22 (col. 4, l. 61-col. 5, l. 4). Ullage may be provided in the transformer 14 or a conservator 22 (col. 4, ll. 12-14).

Magnier discloses mechanisms for going beyond the functionality of Buchholz relays (col. 2, ll. 56-59) in responding to catastrophic transformer failures, compensating for fire and other agents of rapid gas evolution by killing power, dumping fill fluid out of the transformer quickly enough to prevent rupturing the transformer housing, and flooding large volumes of noncombustible gas into the transformer in hopes of interrupting and suppressing deflagration (col. 3, ll. 1-33 and 47-53). Magnier places pressure, temperature, and vapor sensors 11, 12, and

13, respectively, in strategic locations, including in a line 9 leading from the transformer housing 2 to an external conservator 8, with a separate control device 22 programmed to respond to signals from the sensors 11, 12, and 13 by initiating the dump-and-flood process (col. 2, ll. 35-53). Magnier further provides a rupture disk 27 for managing still-faster pressure rise within an LTC 25 associated with the transformer 1 (col. 2, ll. 35-53; col. 3, l. 65-col. 4, l. 10). The transformer housing 2 and LTC 25 of Magnier are completely full of oil 7 in normal operation, while the associated gas volume or ullage is provided within the conservator 8. Thus any gas in the transformer 1 or the LTC 25 is present as a result of an abnormal condition (col. 2, ll. 59-63).

2. The Applied Art Does Not Teach or Suggest All the Claim Limitations.

The systems disclosed in Yoshiyuki, Golner, and Magnier do not provide apparatus capable of being configured to maintain continuous flow of a nonreactive gas entraining breakdown products from an ullage 34 in an LTC 10.

In Yoshiyuki, oil is drawn from an LTC and tested for the presence of dissolved gases that would be absent except in the event of faults. A test apparatus is intended for detection (and may presumably be suited to use in reporting and initiating alarms), but nowhere in Yoshiyuki is apparatus provided that is capable of maintaining a fault-free condition or of correcting a fault condition that develops. Specifically, substantially continuous outflow of nonreactive gas is nowhere disclosed. Thus, Yoshiyuki does not disclose each and every claim limitation of Applicant's invention.

In Golner, a minimum/maximum state is maintained, with a non-flow state being the ordinary condition of the system disclosed. Specifically, substantially continuous outflow of nonreactive gas is nowhere disclosed. Moreover, the LTC of Golner is expressly not oil filled. Thus, Golner does not disclose each and every claim limitation of Applicant's invention.

In Magnier, emergencies are managed by detecting a major fire event, dumping all oil above a chosen level, and flooding a nonreactive gas from beneath to stir and cool oil that remains in a transformer. Nowhere in Magnier is a provision for removing breakdown products

by substantially continuous outflow of nonreactive gas disclosed. Thus, Magnier does not disclose each and every claim limitation of Applicant's invention.

3. The references are nonanalogous art.

Regarding Yoshiyuki, the Office Action states in paragraph 4 that "there is a specific teaching that there is gas present in the mineral oil, the gases present are detected and are analyzed in order to evaluate the conditions of the load tap changer and/or transformer."

This is not relevant to Applicant's claimed invention, which is configured to continuously bleed and restore gas within the ullage 34 above the oil 36 in an LTC 10, irrespective of the presence or absence of contaminant breakdown product gases in the ullage 34 that may have left solution from the oil 36. Applicant's claimed invention does not detect and analyze the oil 36 to evaluate its condition, but instead refreshes the ullage 34, thereby providing a low partial pressure of contaminant gas above the oil 36, whereby any gases previously dissolved in the oil 38 may be enabled to escape the oil 36 and then to be entrained in the nitrogen stream and vented. The test apparatus of Yoshiyuki is not analogous to this.

The Office Action further states in paragraph 4, "There is a clear suggestion and teaching in Golner ... that the system that controls nitrogen pressure in the ullage of power transformer having its windings submerged in oil can also be used in other electrical power handling equipment with electrical components submerged in oil with a ullage [Note Column 2, lines 50-55]." Applicant respectfully disagrees.

Golner states, "[C]ontrol box 20 and load tap changer 24 do not contain oil..." (col. 4, ll. 64-65). Thus, the Examiner's assertion that Golner teaches an LTC containing oil contradicts an express statement in Golner. Golner's use of a valve system that leaves the ullage static unless the pressure deviates outside a range further establishes its nonanalogous status with respect to Applicant's claimed invention. The ullage 34 in an oil-filled LTC 10 is more subject to accumulation of contaminant gases than is the ullage in an oil-filled transformer, so that a

pressure system that does not provide for removal of such gases is not analogous to Applicant's claimed invention.

The Office Action also states in paragraph 4 that "Magnier teaches a method and device for prevention against explosion and fire.... Specifically taught in Magnier is to inject an[] inert gas such as nitrogen into the bottom of the transformer which windings are insulated in a mineral oil or coolant, the injection of the inert gas causes stirring of the coolant (mineral oil)...."

This is not relevant to Applicant's claimed invention, which is configured to continuously bleed and restore gas within the ullage 34 above the oil 36 in an LTC 10, irrespective of the presence or absence in the ullage of contaminant breakdown product gases that may have left solution from the oil. Applicant's claimed invention does not manage an active gas-evolving fire, but instead refreshes the ullage 34 with nitrogen or the like, thereby providing a low partial pressure of contaminant gas above the oil 36, whereby any unwanted gases previously dissolved in the oil may be enabled to escape the oil 36 and then be entrained in the nitrogen stream and vented. Practice of the method of Magnier cannot realize Applicant's claimed invention.

4. The requisite motivation under 35 U.S.C. §103(a) to make the specific claimed combination has not been provided.

Obviousness may be shown by demonstrating that a prior art device could have been modified so as to produce the claimed invention, but only if the prior art suggested the desirability of making such a modification. *E.g., In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984); *Chu*, 66 F.3d at 298. Even if the differences between the claimed invention and the prior art are "minor," or the changes that must be made to the prior art device are "simple," the prior art must provide a teaching or suggestion to make the changes that would produce the claimed invention. *E.g., Chu*, 66 F.3d at 298; *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 935 (Fed. Cir.) (per curiam), cert. denied, 498 U.S. 920 (1990).

All of the cited art lacks disclosure of a substantially continuous outflow of nonreactive gas. Yoshiyuki discloses testing of LTC oil, but nowhere asserts a need to provide automatic management of the oil tested. Golner expressly leaves the LTC empty of oil, and discloses a

system having a system of valves that may leave an LTC sealed (no gas drainage or fill) for any duration, thus allowing accumulation of breakdown gases. Magnier discloses a fire suppression system that is activated only in event of a major casualty event, and which vents liquid oil into an unidentified environment in order to limit casualty scope. None of the cited art discloses substantially continuous outflow of nonreactive gas to expel entrained vapor phase contaminants from an ullage 34 in an LTC 10.

5. A prima facie case of obviousness under 35 U.S.C. § 103(a) has not been established.

In determining whether the subject matter of a patent claim is obvious, "[o]ften it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *KSR Int'l Co. v Teleflex Inc.*, 550 U.S. _____, 127 S. Ct. 1727, 1741 (2007)

Thus, there must be some reason, other than hindsight, for combining prior art references to create the claimed invention. *E.g., Alco N. V. v. US. Int'l Trade Comm 'n*, 808 F.2d 1471, 1481 (Fed. Cir. 1986), cert. denied, 482 U.S. 909 (1987) ("[The party challenging validity] cannot pick and choose among individual parts of assorted prior art references 'as a mosaic to recreate a facsimile of the claimed invention.") (*quoting WL. Gore & Assocs., Inc. v. Garlock Inc.*, 721 F.2d 1540, 1552 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984)); Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1143 (Fed. Cir. 1985) ("[T]here must be some reason for the combination other than the hindsight gleaned from the invention itself.").

The allegedly anticipating disclosed inventions arguably contain a mosaic of components from which Applicant's invention might be recreated. However, the overpressure relief valve of Golner would have to be replaced with an orifice permitting continuous flow, while the oil-filled LTC of Yoshiyuki would have to acquire an ullage, and the nitrogen feed of Magnier would have

to be relocated to a point above the surface of the oil, which would inhibit the intended purpose of stirring the residual oil during a casualty event.

It is Applicant's position that, for at least the reasons stated hereinabove, Yoshiyuki fails to disclose the present invention as recited in claim 1 and is therefore precluded from use as a reference. *See M.P.E.P. 2145(D)(2).* The motivation for persons skilled in the art to attempt to modify the teachings of a reference is based upon the expectation that the modifications would be successful. When limited to testing LTC oil in a reservoir isolated from a transformer oil reservoir, there could be no expectation, based on Yoshiyuki, of successfully entraining and venting arc-induced breakdown products as taught in Applicant's invention. Consequently, Yoshiyuki would not be relied upon to practice the invention as recited in claim 1.

Moreover, no cited reference makes up for the deficiencies of Yoshiyuki. Thus, Applicant contends that Yoshiyuki cannot be utilized when making a proper, *prima facie* case of obviousness rejection under 35 U.S.C. §103(a), because there is no motivation to modify Yoshiyuki or to combine Yoshiyuki with any other cited reference.

Golner and Magnier fail to overcome the deficiencies of Yoshiyuki. In general, Golner is directed to a dry LTC and to valves that do not vent while gas pressure remains within limits. *See Fig. 1; column 4, lines 24-38 and 64-65.* Magnier provides a dump valve controlled by overpressure/overtemperature/gas sense transducers. *See Figs. 1 and 2; column 3, lines 10-39 and column 3, line 65-column 4, line 10.*

Yoshiyuki, Golner, and Magnier fail to disclose methods related to a continuous outflow rate of nonreactive gas. To the contrary, the devices and methods of Yoshiyuki in view of Golner and Magnier lack any disclosure or suggestion of maintaining a continuous outflow rate of nonreactive gas in an oil-filled LTC. Therefore, none of Yoshiyuki, Golner, and Magnier, alone or in any combination, teach or suggest a protected LTC 10 as recited in any of independent claims 1, 20, or 24.

In view of the foregoing, the rejection under 35 U.S.C. § 103(a) regarding claims 2-16, 18, 21-23, 25, and 26 as being unpatentable over Yoshiyuki in view of Golner and Magnier should be reversed, at least because Yoshiyuki, Golner, and Magnier fail to disclose "a source of substantially nonreactive gas at a pressure greater than ambient atmospheric pressure ... wherein the load tap changer contains mineral oil, and an orifice configured to establish a substantially continuous outflow rate of nonreactive gas to expel entrained vapor phase contaminants from the ullage in the load tap changer to the atmosphere...." as recited, *inter alia*, in claim 1. Yoshiyuki, Golner, and Magnier also fail to disclose "means for extracting nitrogen gas from the atmosphere, means for urging said extracted nitrogen gas into an ullage in the load tap changer ... and means for expelling vapor phase contaminants from the ullage in the load tap changer by establishing a substantially continuous outflow of nitrogen...." as recited, *inter alia*, in claim 20. Yoshiyuki, Golner, and Magnier also fail to disclose "extracting nitrogen gas from the atmosphere, urging the extracted nitrogen gas into an ullage in the load tap changer ... and expelling vapor phase contaminants from the ullage in the load tap changer by establishing a substantially continuous outflow of nitrogen...." as recited, *inter alia*, in claim 24.

Claims 2-16 and 18 depend from independent claim 1. Claims 21-23 depend from independent claim 20. Claims 25 and 26 depend from independent claim 24. Therefore, the rejection under 35 U.S.C. § 103(a) regarding claims 1-16, 18 and 20-26, as being unpatentable over Yoshiyuki in view of Golner and Magnier should be reversed.

VIII. CONCLUSION

For all of the above-noted reasons, it is strongly contended that certain, clear, and important distinctions exist between the present invention as recited in claims 1-16, 18 and 20-26 and the cited references as provided in the Office Action. It is further contended that these distinctions are more than sufficient to render the claimed invention not anticipated and non-obvious to a person of ordinary skill in the art at the time the invention was made.

This final rejection being in error, therefore, it is respectfully requested that this Honorable Board of Patent Appeals and Interferences reverse the Examiner's decision in this case, and indicate the allowability of claims 1-16, 18 and 20-26.

In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. Please charge any fee deficiencies or credit any overpayments to Deposit Account No. 50-2036.

Respectfully submitted,
BAKER & HOSTETLER LLP

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Date: 8/1/07

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CLAIM APPENDIX

IN THE CLAIMS:

1. A gas remover to control an environment in a load tap changer, the gas remover comprising:

a source of substantially nonreactive gas at a pressure greater than ambient atmospheric pressure;

a feed line configured to introduce the nonreactive gas into an ullage in the load tap changer;

a sight glass on the load tap changer to permit examination of the inside of the load tap changer, wherein the load tap changer contains mineral oil; and

an orifice configured to establish a substantially continuous outflow rate of nonreactive gas to expel entrained vapor phase contaminants from the ullage in the load tap changer-to the atmosphere.

2. The gas remover of claim 1, wherein the gas remover further comprises a nitrogen generator configured to extract nitrogen from the atmosphere for use as the substantially nonreactive gas.

3. The gas remover of claim 2, wherein the gas remover further comprises an inlet air filtration system to filter air entering said nitrogen generator.

4. The gas remover of claim 2, wherein the gas remover further comprises an air compressor to furnish compressed air to said nitrogen generator.

5. The gas remover of claim 2, wherein the gas remover further comprises a gas separating

membrane within said nitrogen generator, wherein said separating membrane is capable of removing gases including at least one of ozone, carbon compounds, sulfur dioxide, and hydrogen sulfide from the outflow stream from said nitrogen generator to limit each contaminant to a maximum of 1 part per million of the mass of the outflow gas.

6. The gas remover of claim 2, wherein the gas remover further comprises a gas separating membrane within said nitrogen generator, wherein said separating membrane is capable of removing gases including at least one of oxygen and water vapor from the outflow stream from said nitrogen generator to limit each contaminant to a levels specified by the American Society of Testing and Materials (ASTM) for Type I insulating gas.

7. The gas remover of claim 2, wherein the gas remover further comprises a storage reservoir within said nitrogen generator configured to store nitrogen during an operational period for said nitrogen generator.

8. The gas remover of claim 2, wherein the gas remover further comprises a pressure regulator in the feed line from said nitrogen generator to the load tap changer ullage to lower the nitrogen pressure from a first pressure level at which the nitrogen is generated and stored to a second pressure level at which it is introduced into the load tap changer ullage.

9. The gas remover of claim 1, wherein the gas remover further comprises a gas flow path that establishes an effective output venting rate from the load tap changer ullage to a standard atmosphere.

10. The gas remover of claim 1, wherein the venting rate is dependent on total gas pressure within the ullage.

11. The gas remover of claim 1, wherein the gas remover further comprises a gas flow path establishing an output venting rate from the load tap changer ullage to the atmosphere surrounding the load tap changer of approximately 2 cubic feet of nitrogen per day.

12. The gas remover of claim 2, wherein the gas remover further comprises an alternative pressure regulation facility in the feed line from said nitrogen generator to the load tap changer ullage, which alternative pressure regulation facility provides an increased flow rate from the nitrogen section to the load tap changer ullage during a venting cycle.

13. The gas remover of claim 2, wherein the gas remover further comprises an alternative pressure regulation facility in the feed line from said nitrogen generator to the load tap changer ullage, which alternative pressure regulation facility provides an increased flow rate from the load tap changer ullage to the atmosphere during a venting cycle.

14. The gas remover of claim 1, wherein the gas remover further comprises a control mechanism to permit manual selection of said alternative pressure regulation facility.

15. The gas remover of claim 1, wherein the gas remover further comprises an automatic control mechanism to permit pressure-regulated engagement of said alternative pressure regulation facility.

16. The gas remover of claim 1, wherein the gas remover further comprises a check valve between said orifice and the atmosphere.

17. (Cancelled)

18. The gas remover of claim 1, wherein the gas remover further comprises a fill gas other than nitrogen.

19. (Cancelled)

20. A gas remover to control an environment in a load tap changer, comprising:

means for extracting nitrogen gas from the atmosphere;

means for urging said extracted nitrogen gas into an ullage in the load tap changer;

means for monitoring the condition inside the load tap changer, wherein the load tap changer contains mineral oil; and

means for expelling vapor phase contaminants from the ullage in the load tap changer by establishing a substantially continuous outflow of nitrogen.

21. The gas remover of claim 20, further comprising:

means for filtering atmospheric air introduced into said nitrogen generator; and

means for compressing atmospheric air introduced into said nitrogen generator to a pressure level sufficient to extract nitrogen therefrom.

22. The gas remover of claim 20, further comprising means for separating gaseous nitrogen from the compressed atmospheric air introduced into said nitrogen generator.

23. The gas remover of claim 20, further comprising:

means for applying power to said compressing means;

means for controlling application of power to said compressing means; and

means for establishing pressure thresholds at which power directed to said compressing means may be applied and removed.

24. A process for controlling an environment in a load tap changer, comprising the steps of:

extracting nitrogen gas from the atmosphere;

urging the extracted nitrogen gas into an ullage in the load tap changer;

monitoring the condition inside the load tap changer, wherein the load tap changer contains mineral oil; and

expelling vapor phase contaminants from the ullage in the load tap changer by establishing a substantially continuous outflow of nitrogen.

25. The gas removal process of claim 24, further comprising the steps of:

filtering atmospheric air in advance of extracting nitrogen therefrom; and

compressing atmospheric air to a pressure level sufficient to extract nitrogen therefrom.

26. The gas removal process of claim 24, further comprising the step of separating gaseous nitrogen from the compressed atmospheric air.

EVIDENCE APPENDIX

Appellant submits that no evidence is being relied upon in the appeal.

RELATED PROCEEDINGS APPENDIX

Appellant submits that there are no decisions rendered by a court or the Board in any proceeding identified pursuant to 37 CFR 41.37 (c)(1)(ii).